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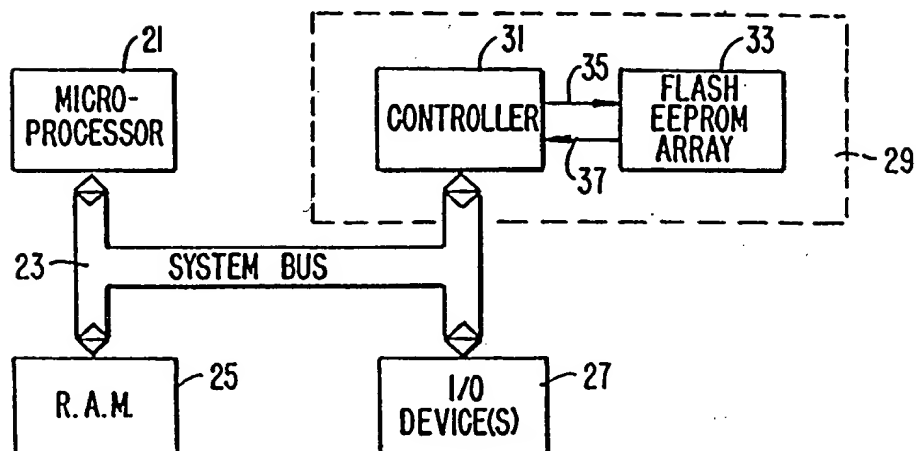


FIG. 1A

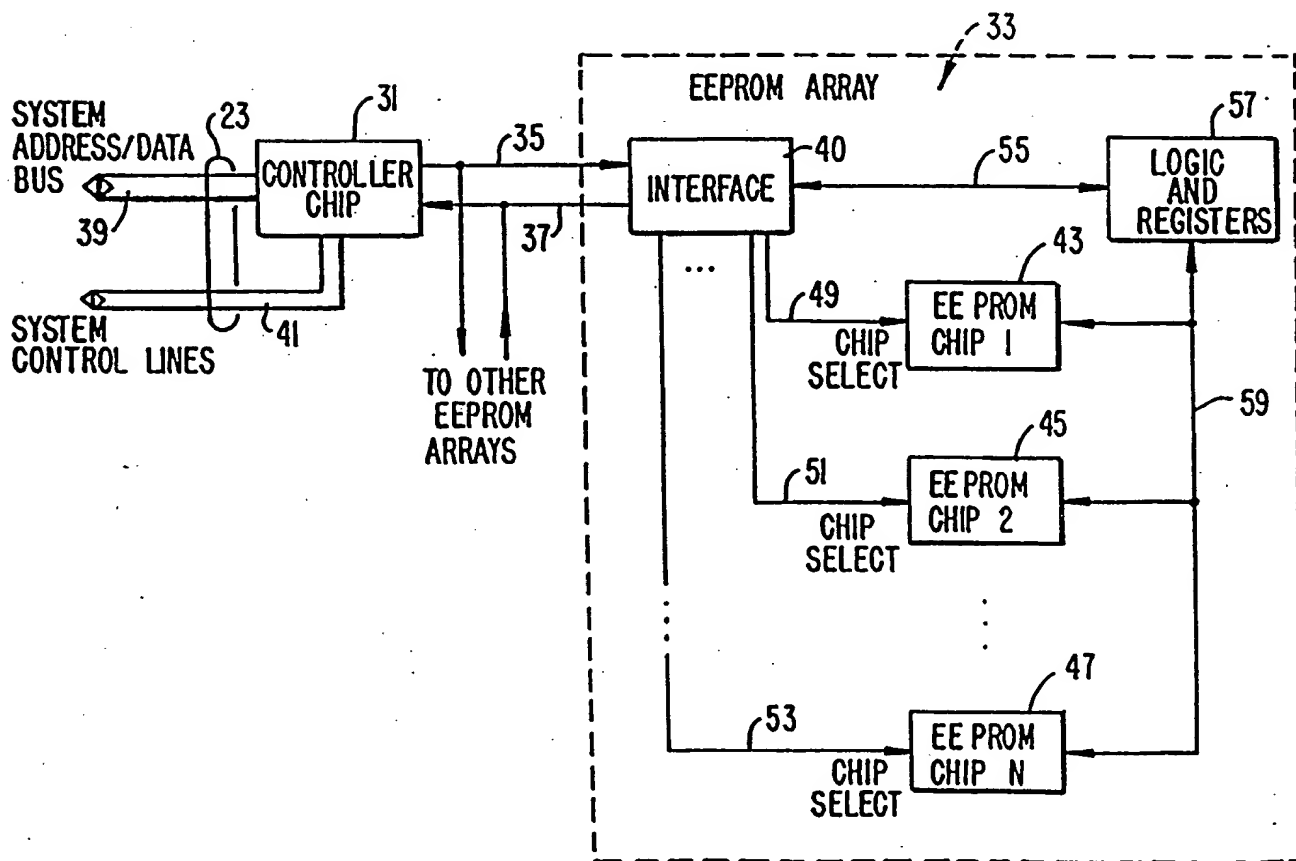


FIG. 1B



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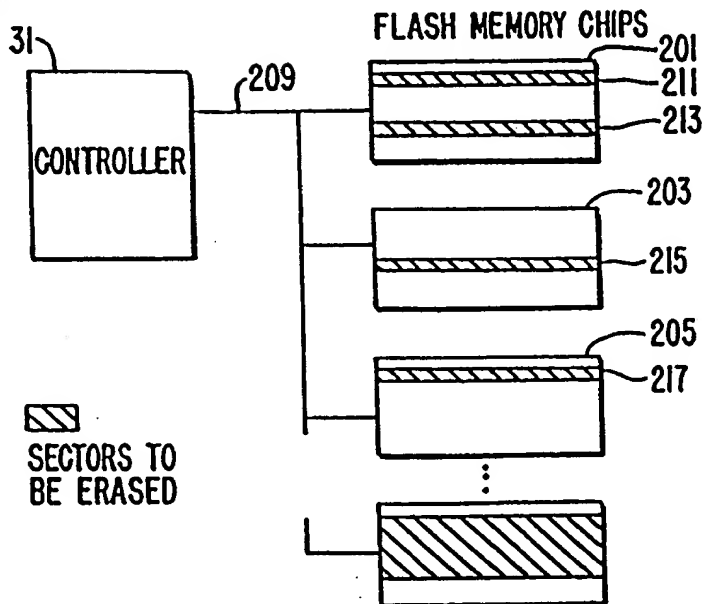


FIG. 2

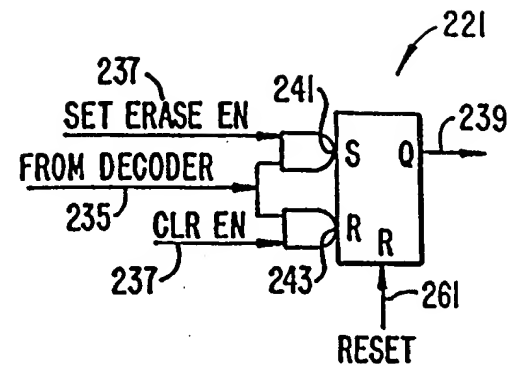


FIG. 3B

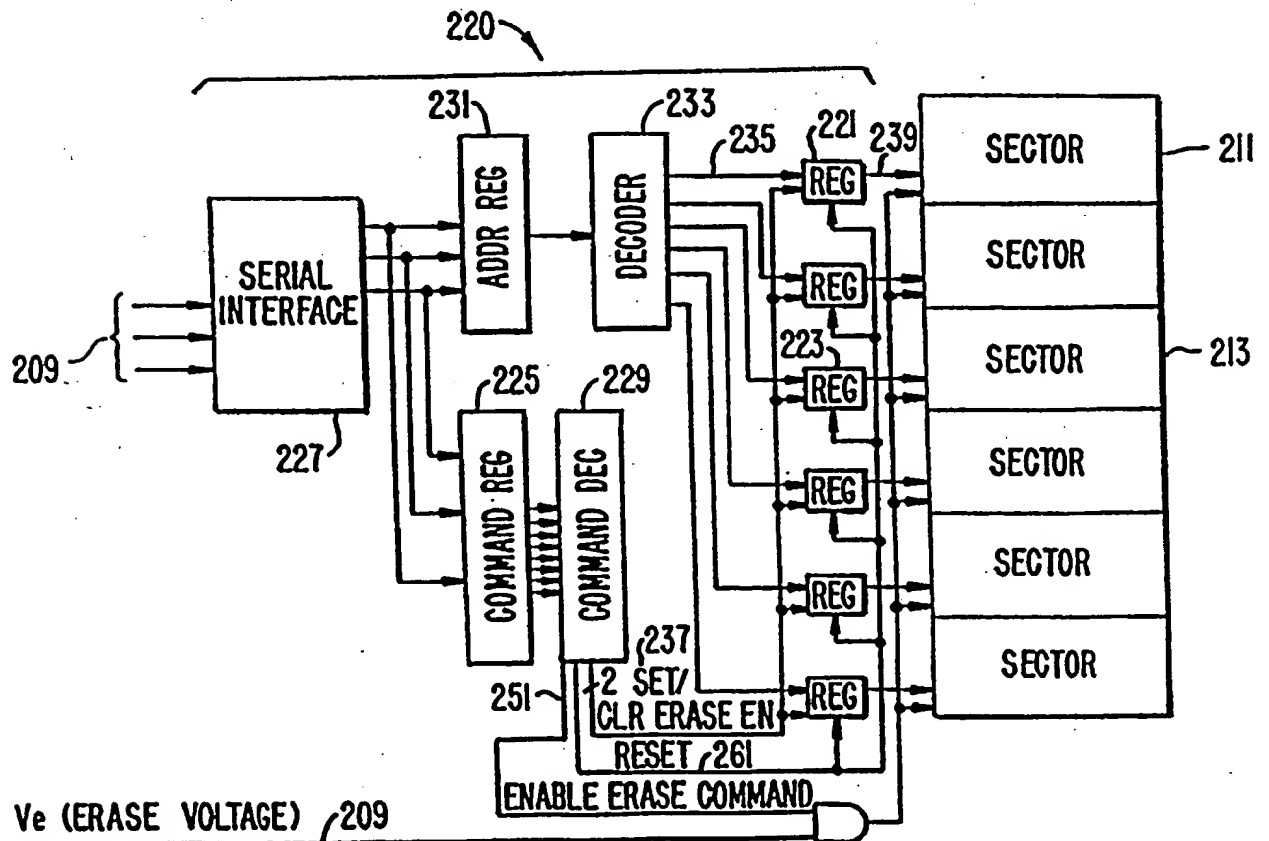


FIG. 3A



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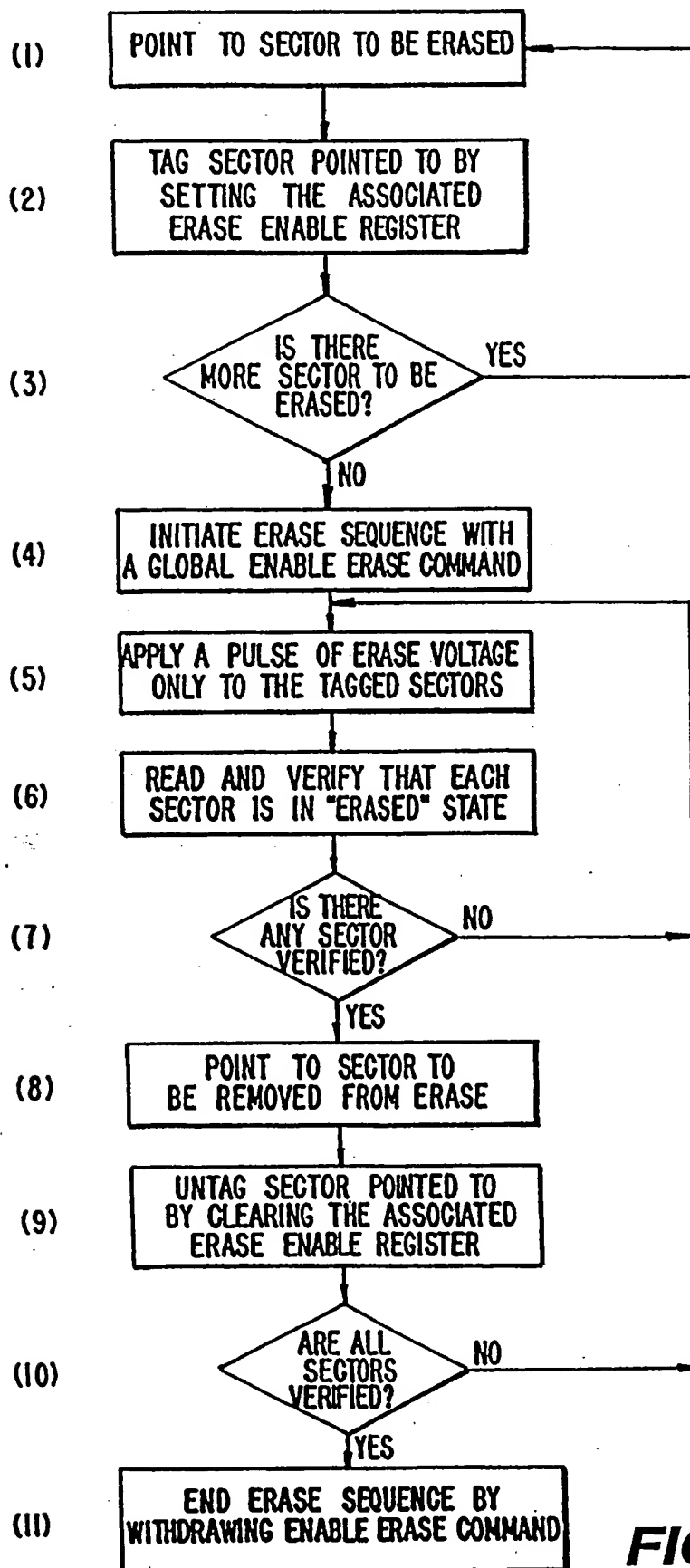
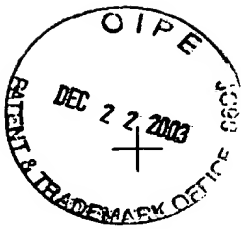


FIG._4



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FIG. 5

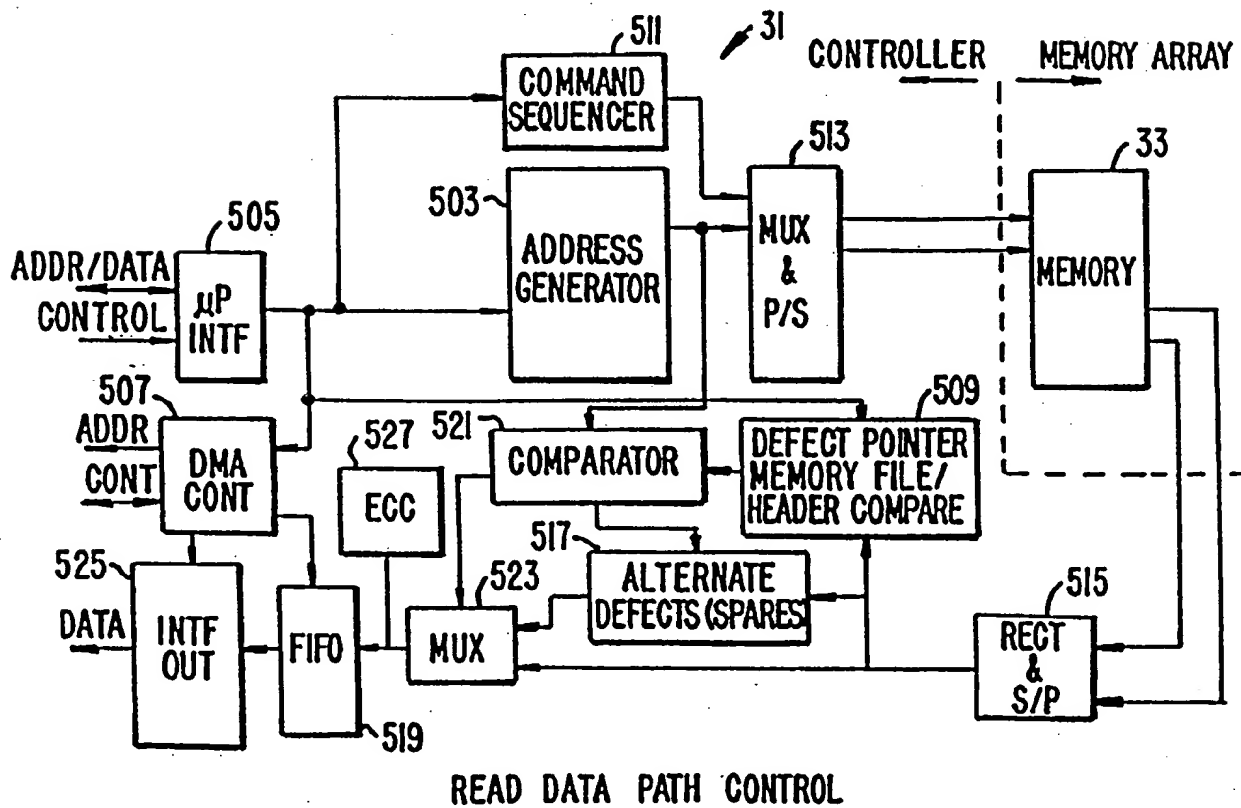
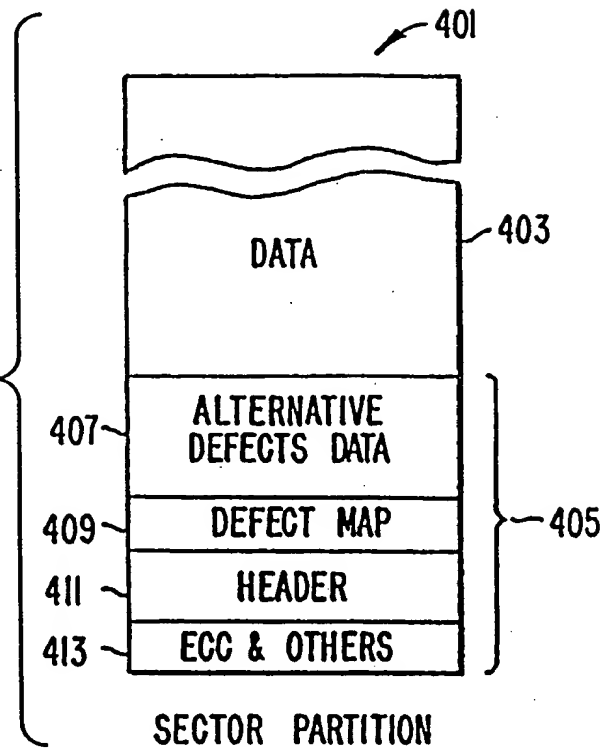
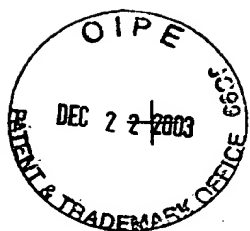
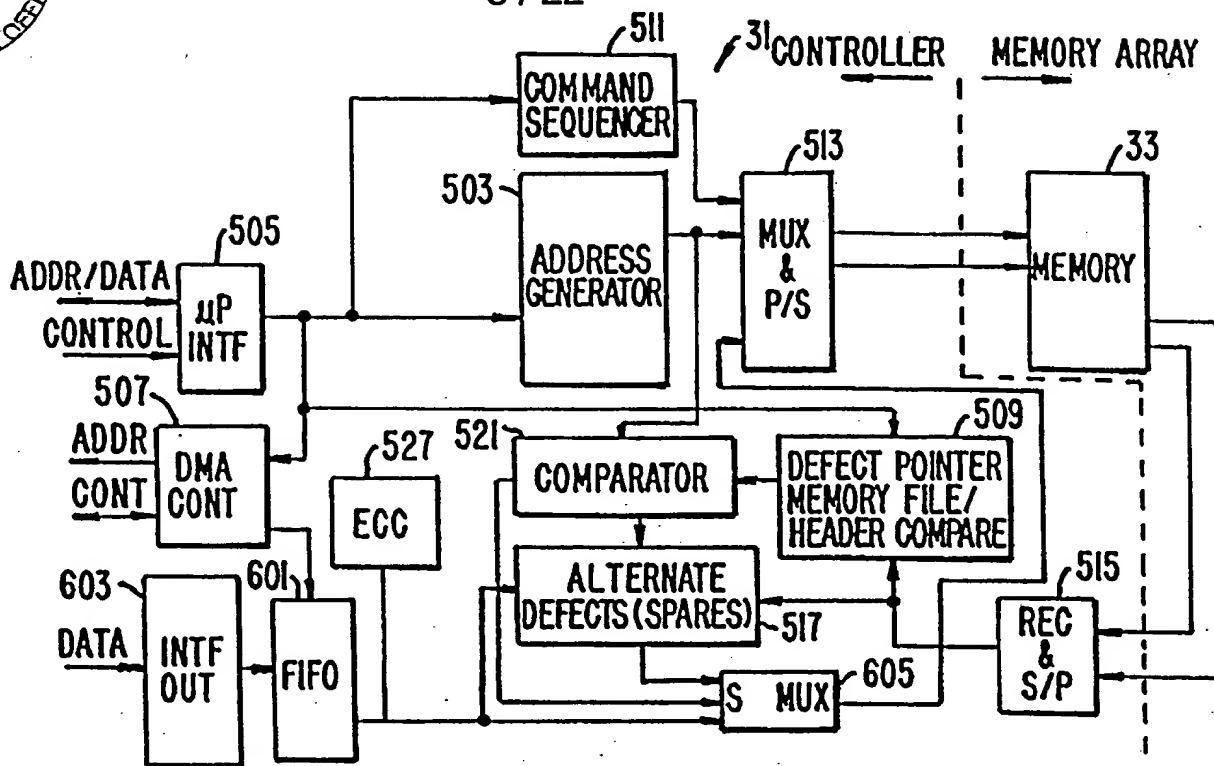


FIG. 6



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WRITE DATA PATH CONTROL

FIG. 7

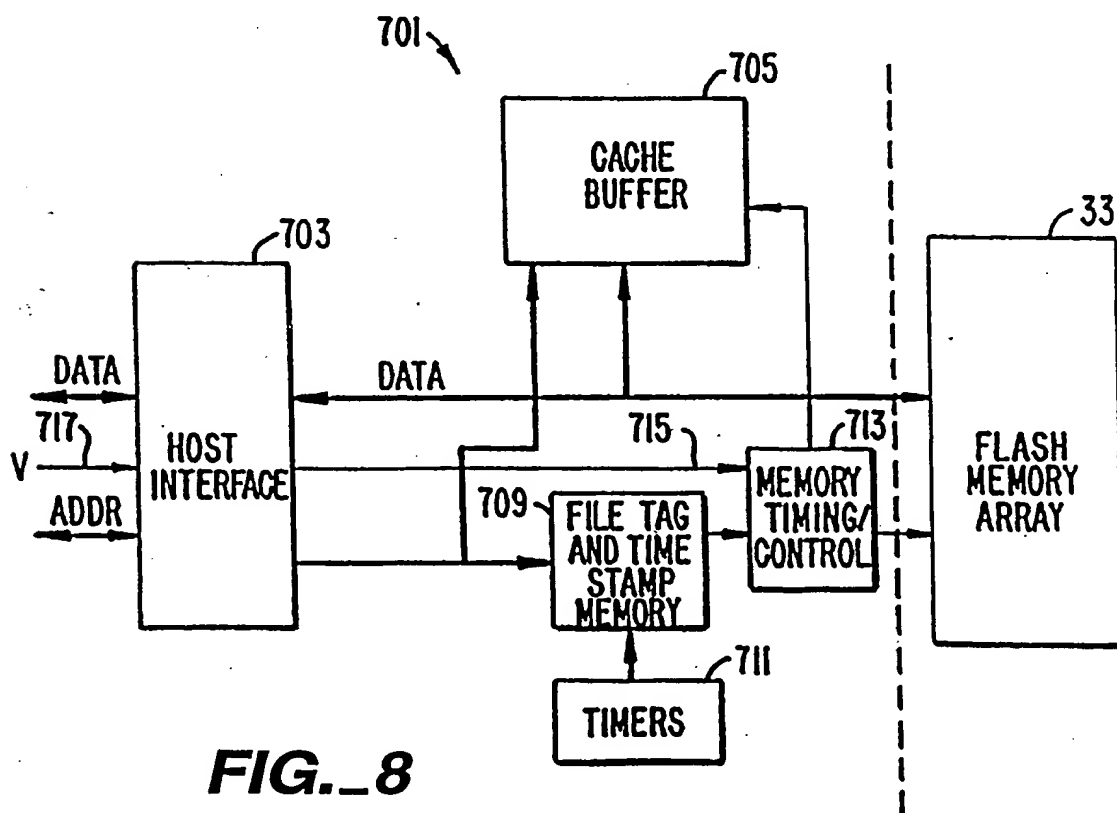


FIG. 8



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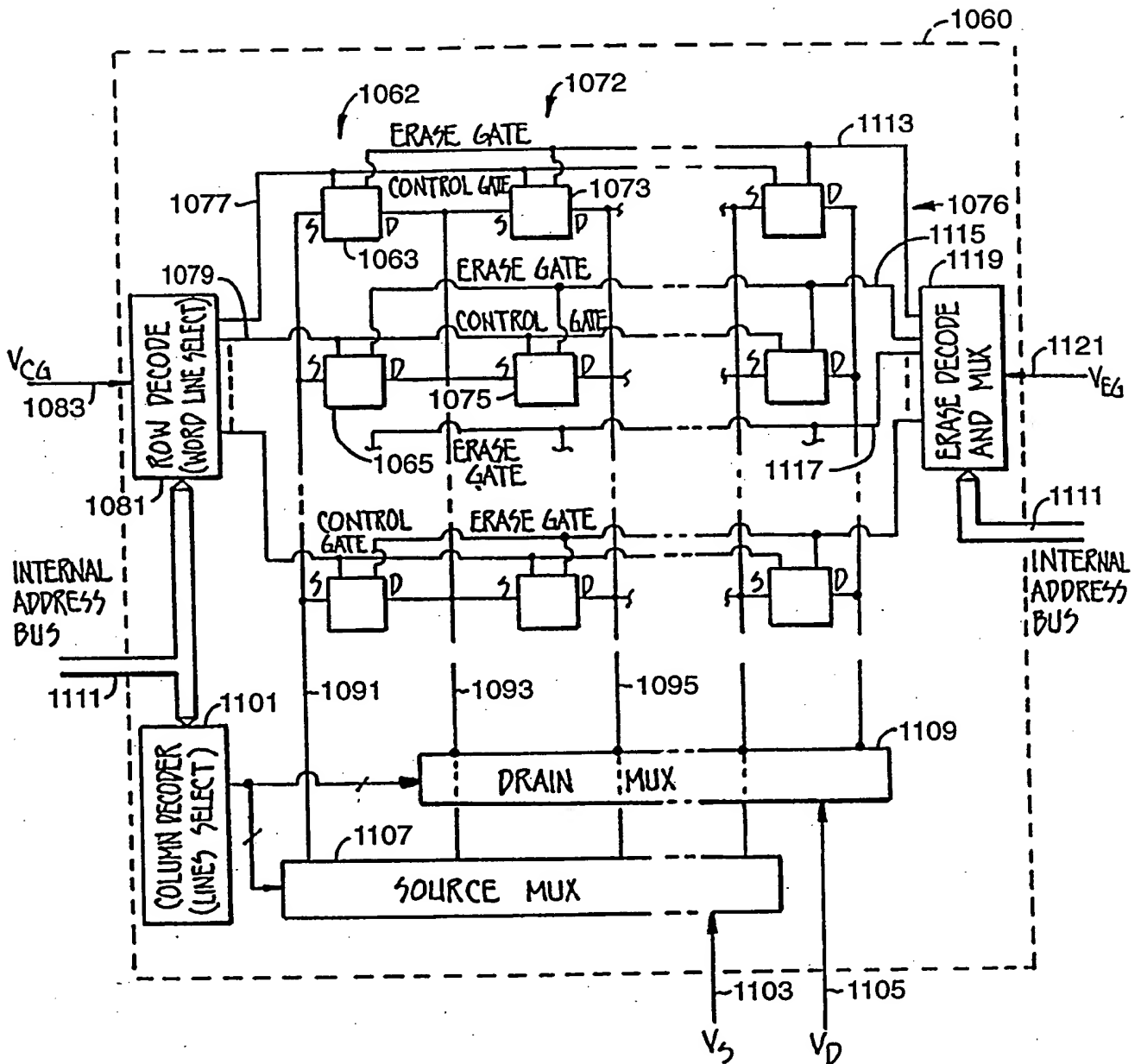


FIG. 12



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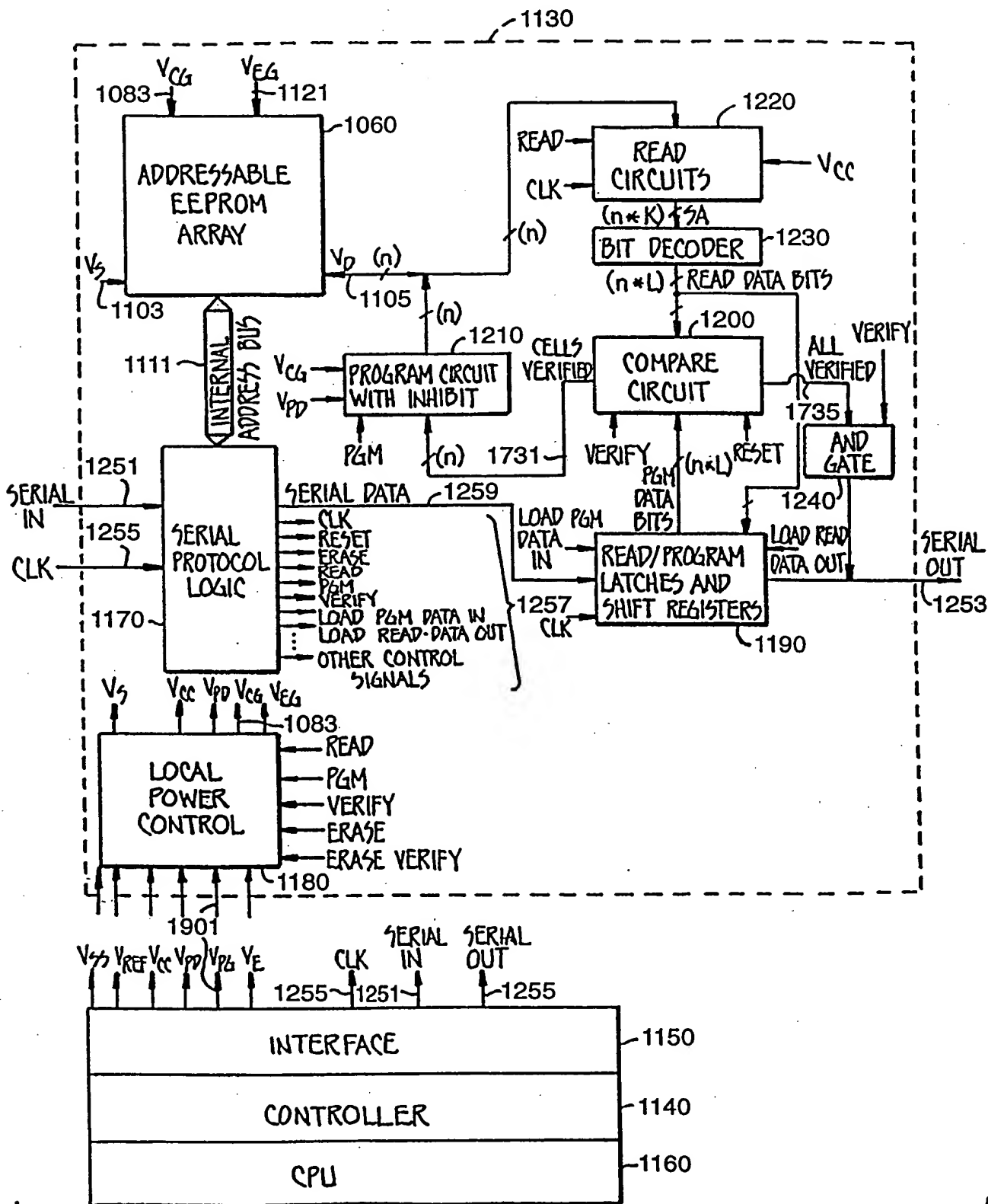


FIG. 13



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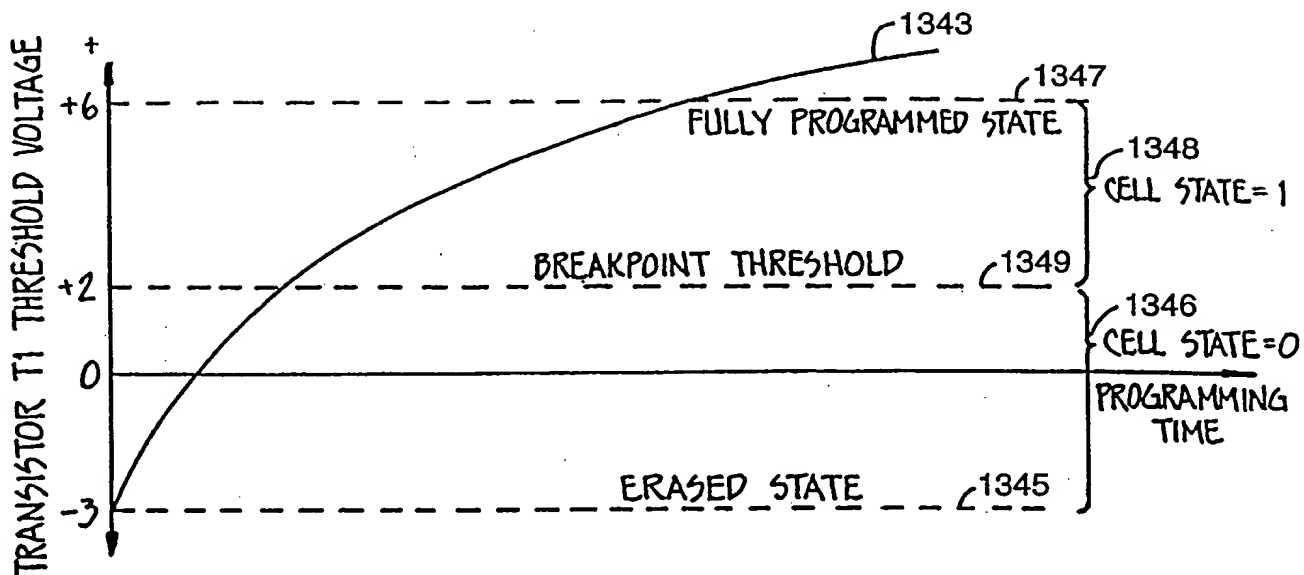


FIG. 14

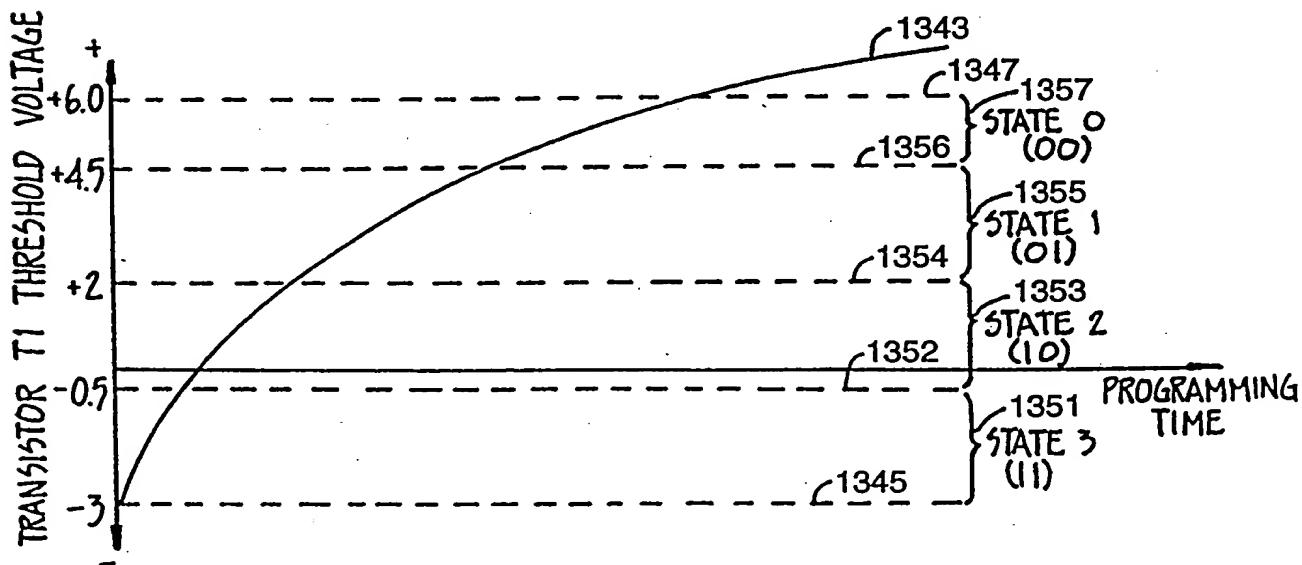


FIG. 15A



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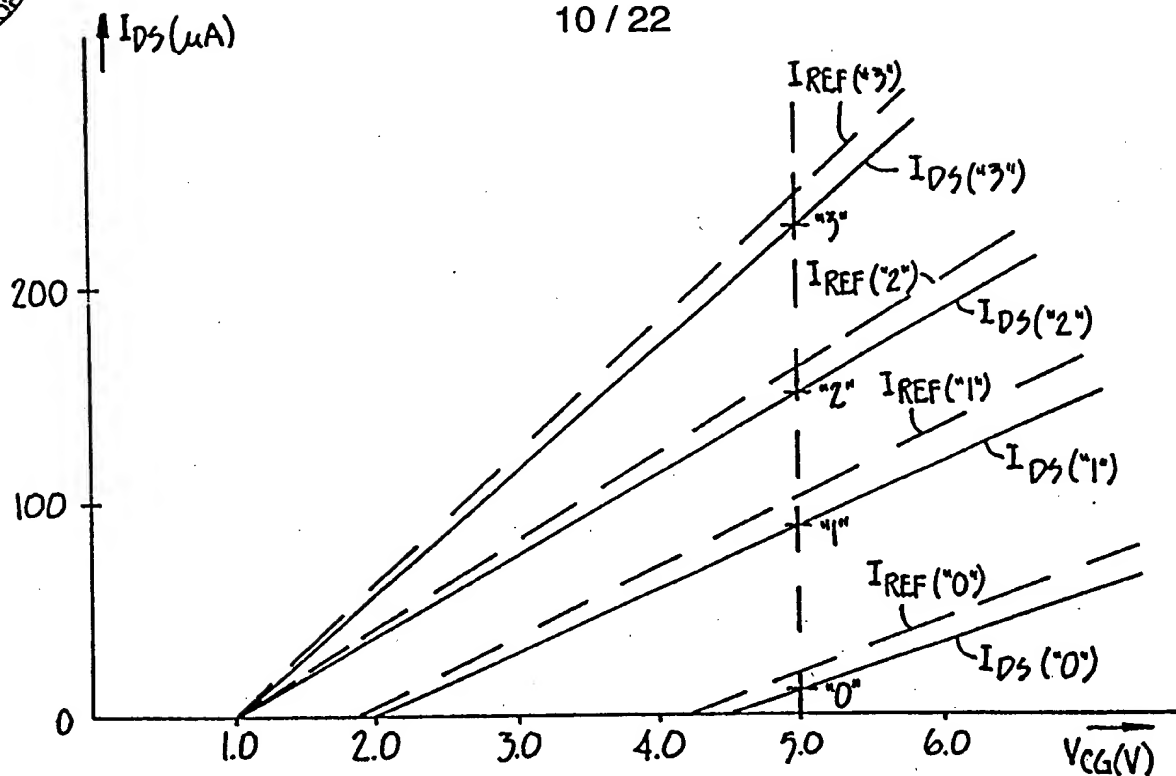


FIG._15B

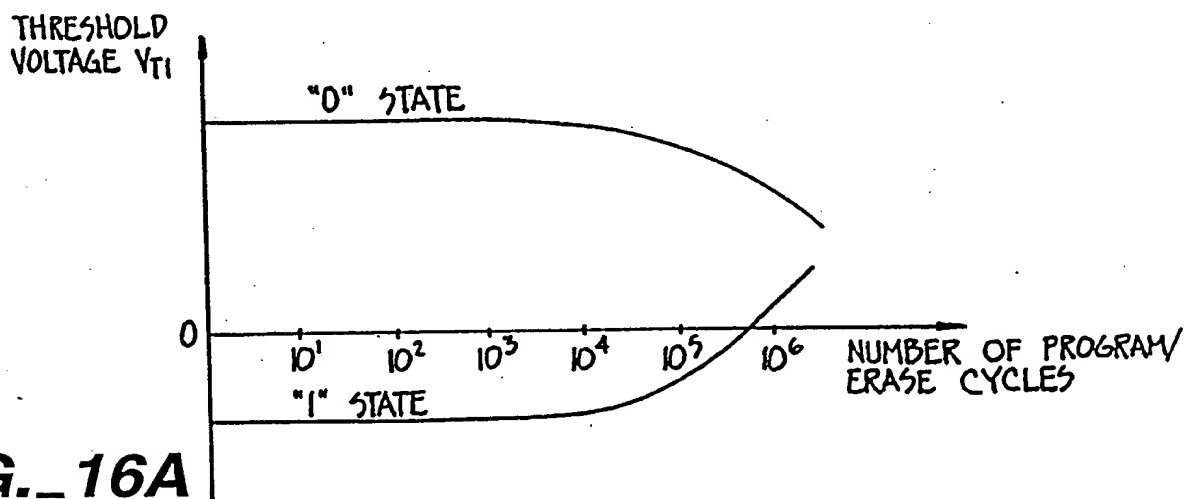


FIG._16A

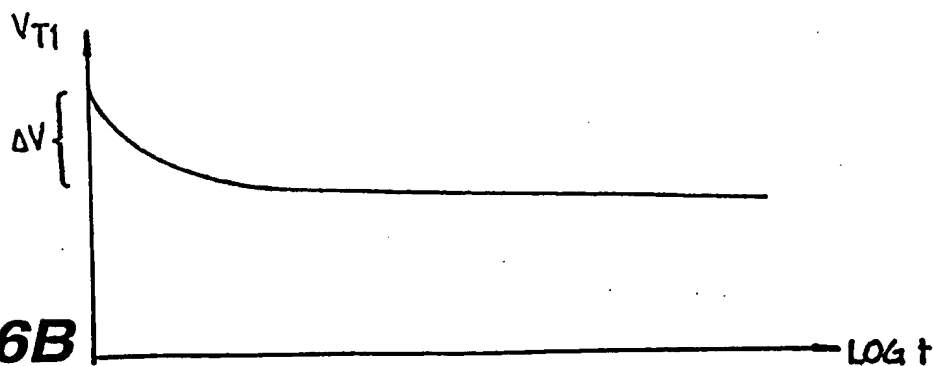


FIG._16B



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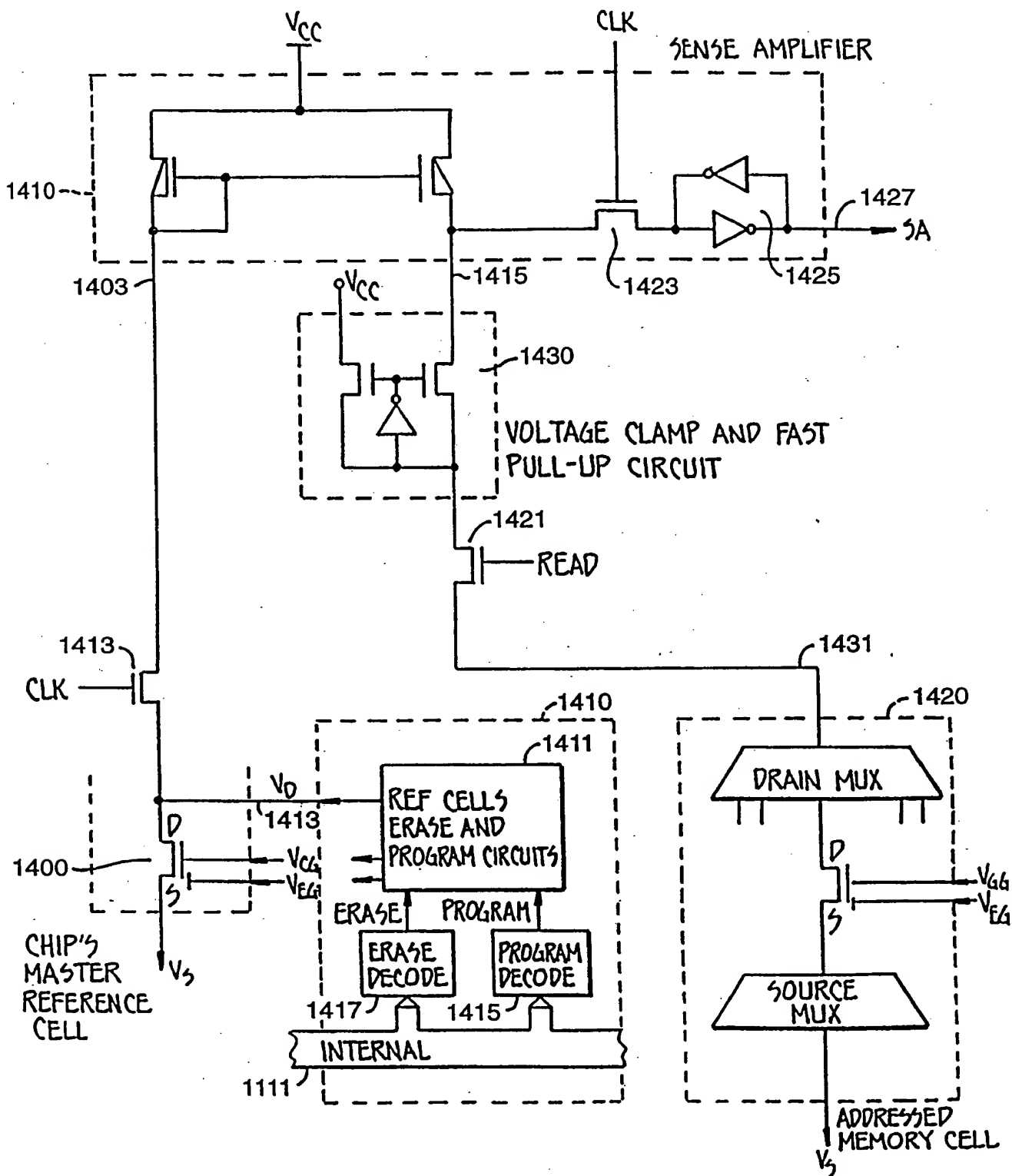


FIG. 17A



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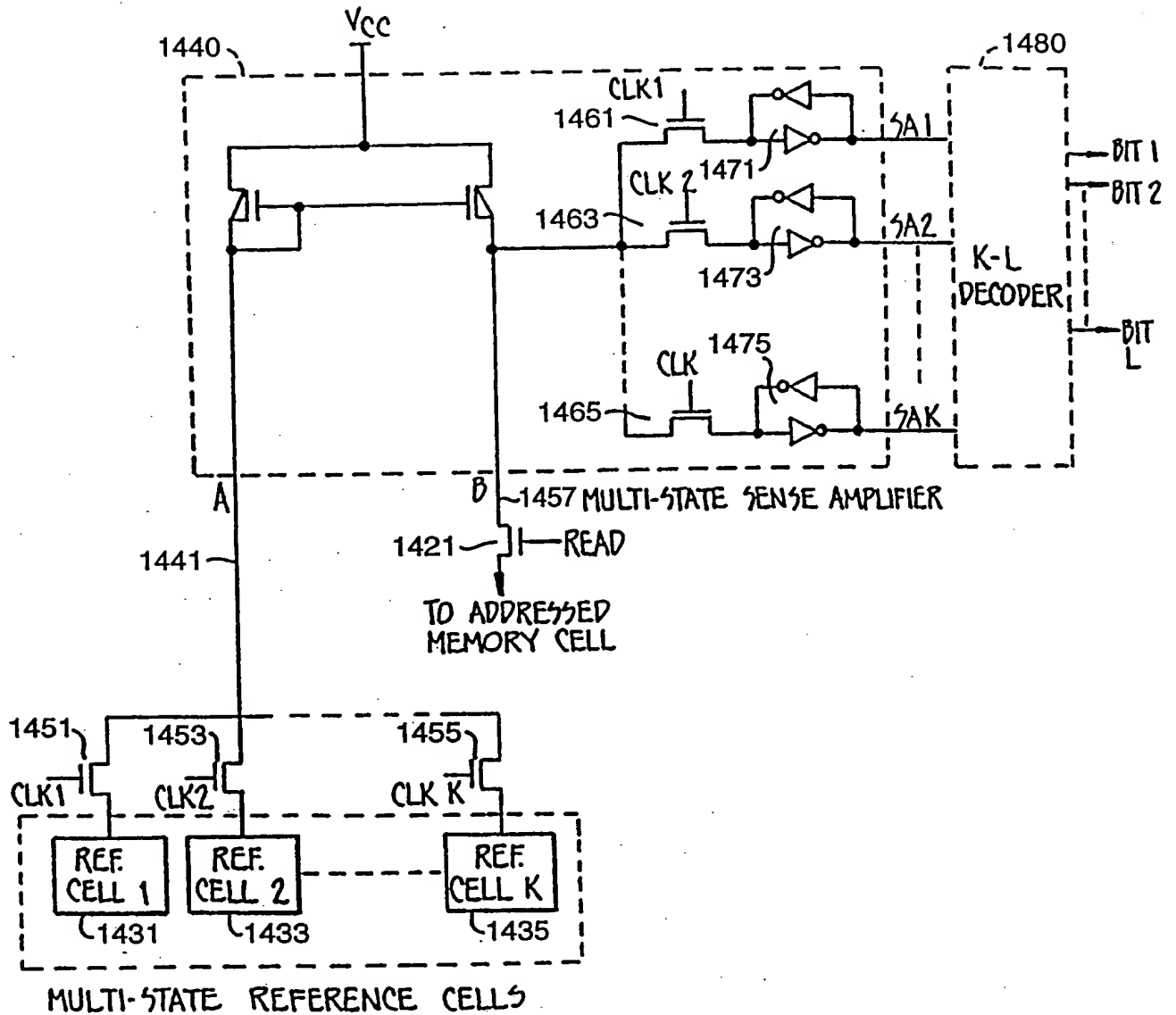


FIG. 17B



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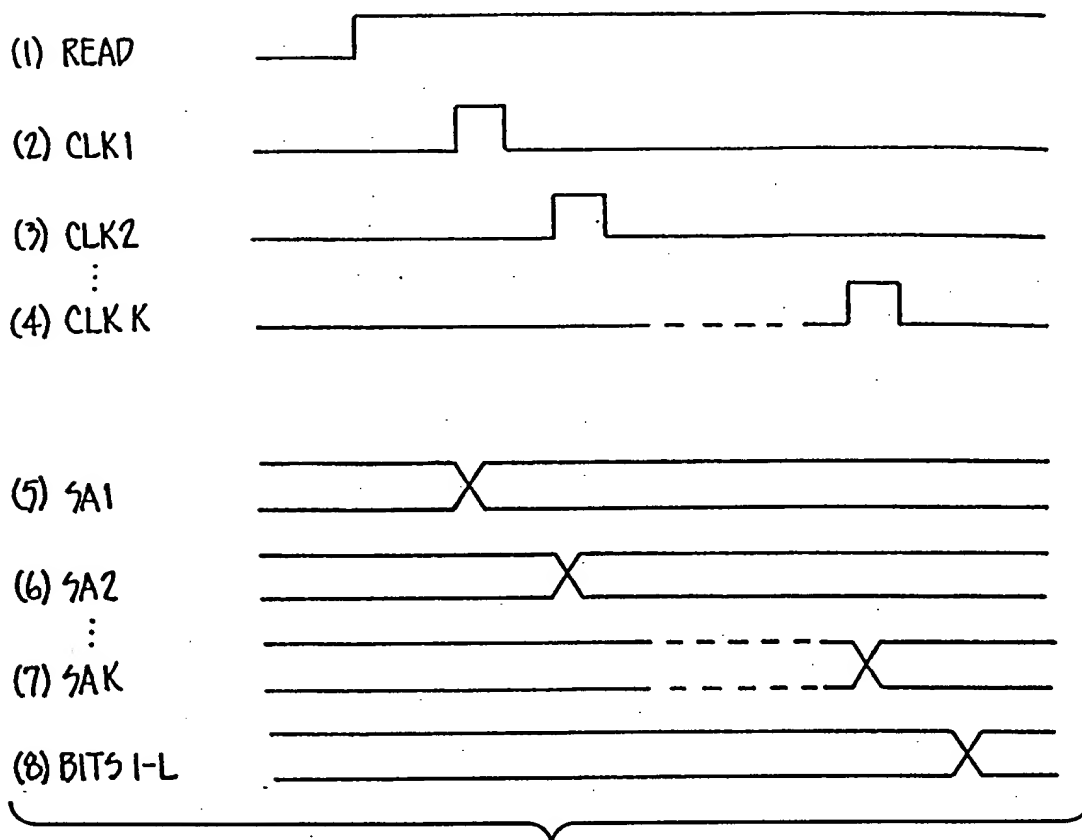


FIG. 17C

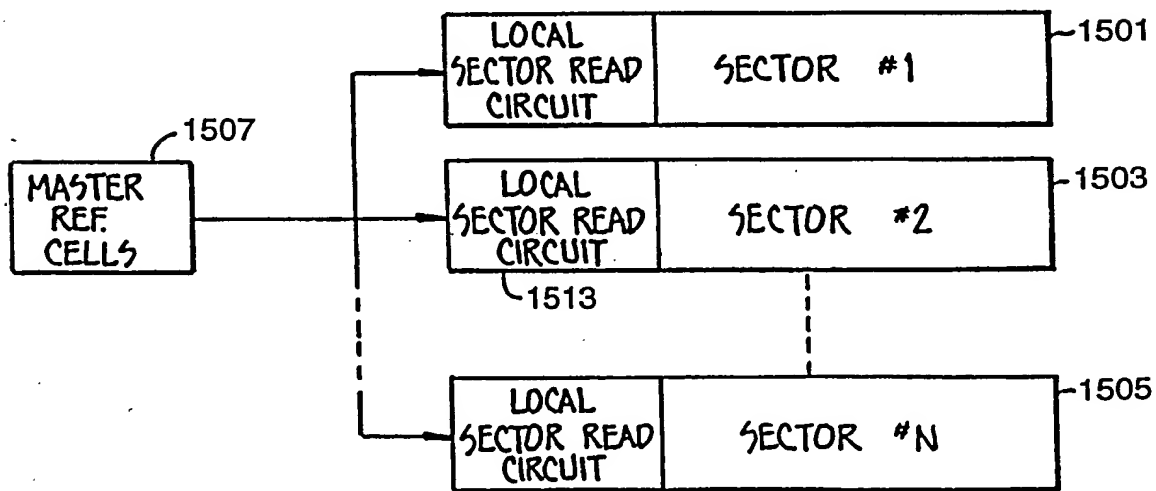
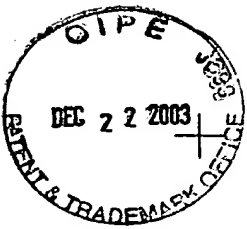


FIG. 18

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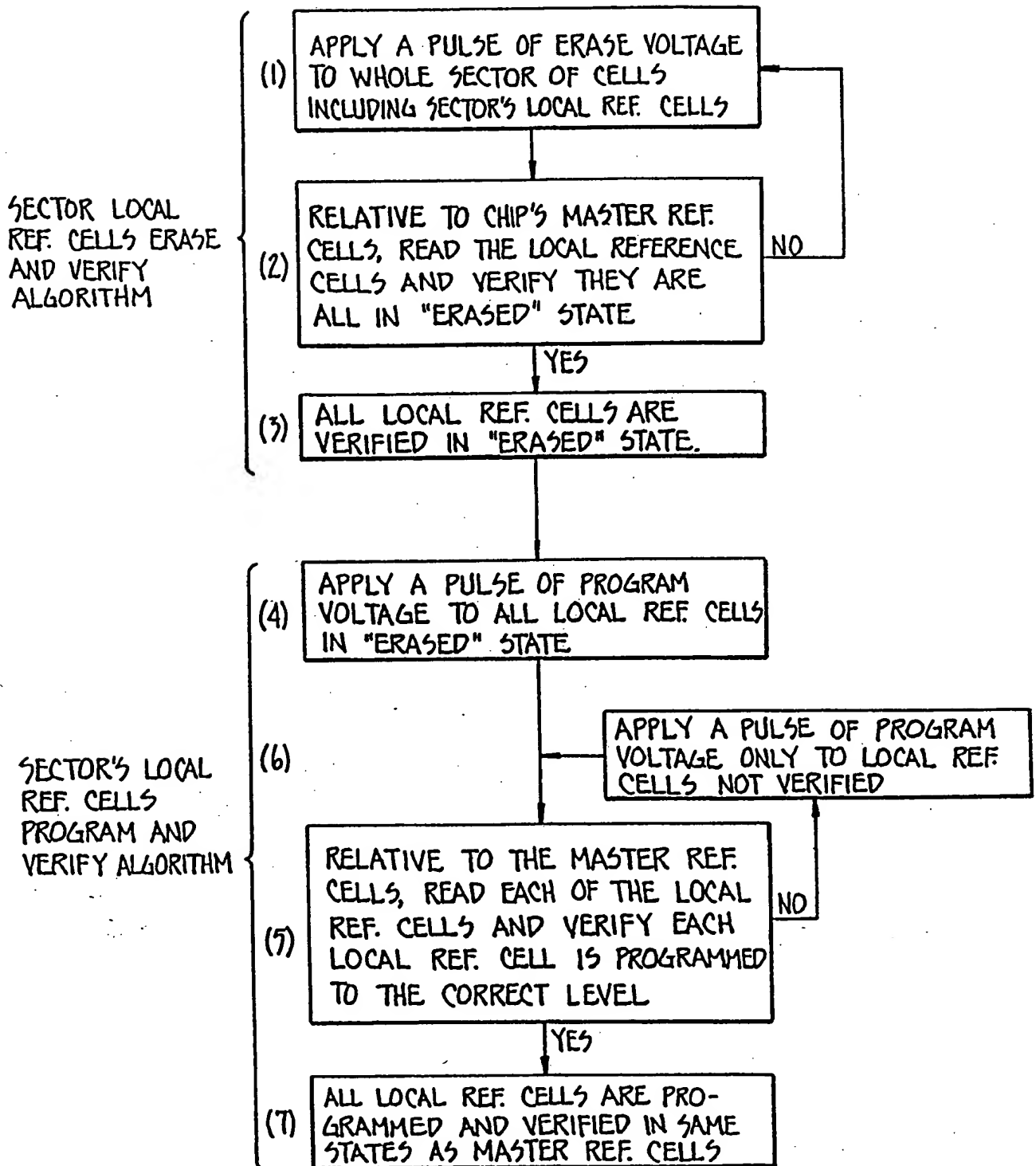


FIG. 19

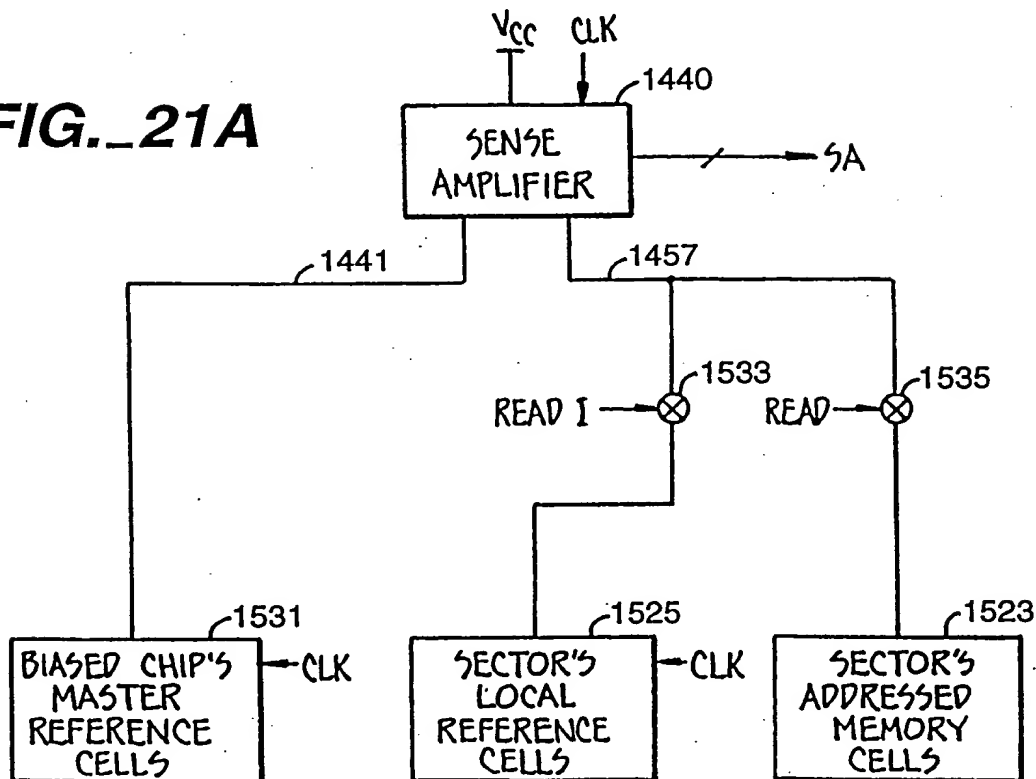
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FIG. 21A



- (1) LOCAL REF. CELLS ARE PREVIOUSLY PROGRAMMED AND VERIFIED IN SAME STATES AS MASTER REF. CELLS
- (2) RELATIVE TO THE LOCAL REFERENCE CELLS READ THE MASTER REF. CELLS
- (3) DETERMINE THE DIFFERENCES, IF ANY AND BIAS. THE MASTER REF CELLS' CURRENTS SUCH THAT THE SAME READING IS OBTAINED RELATIVE TO THE BIASED MASTER REF. CELLS AS RELATIVE TO THE LOCAL REF. CELLS
- (4) RELATIVE TO THE BIASED MASTER REF. CELLS, READ THE ADDRESSED CELLS

FIG. 21D



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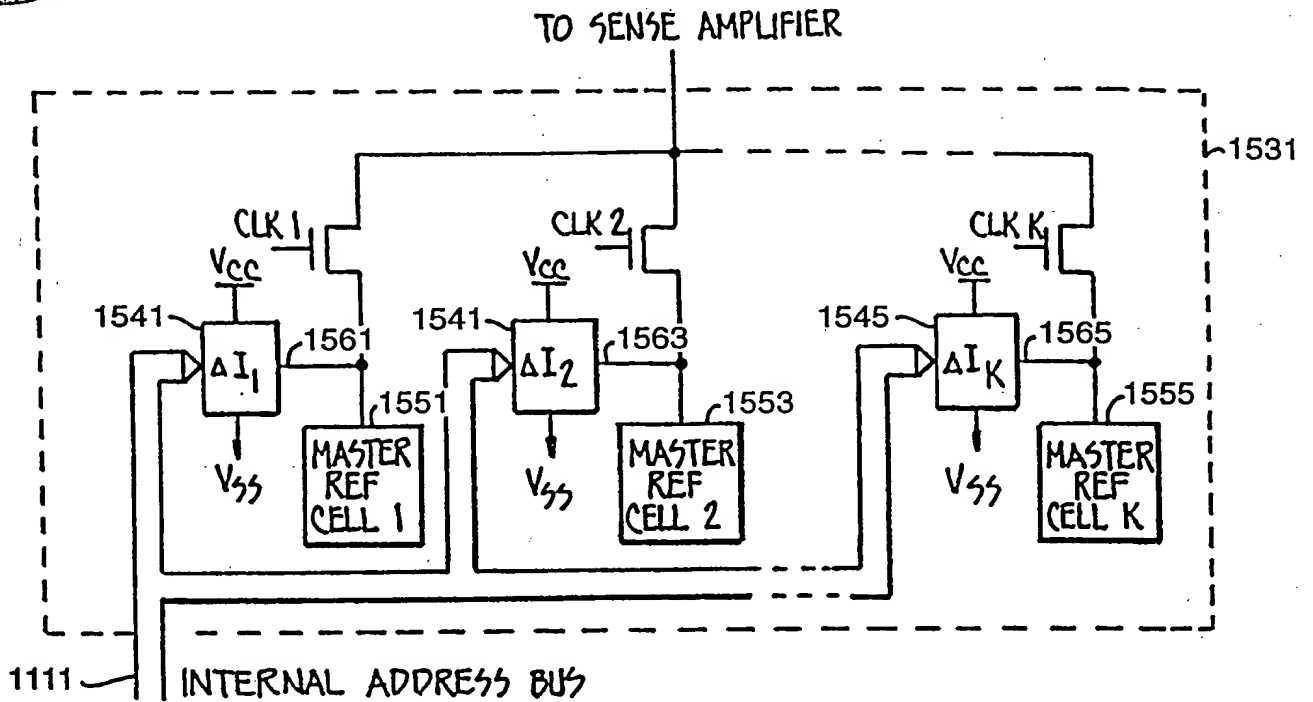


FIG. 21B

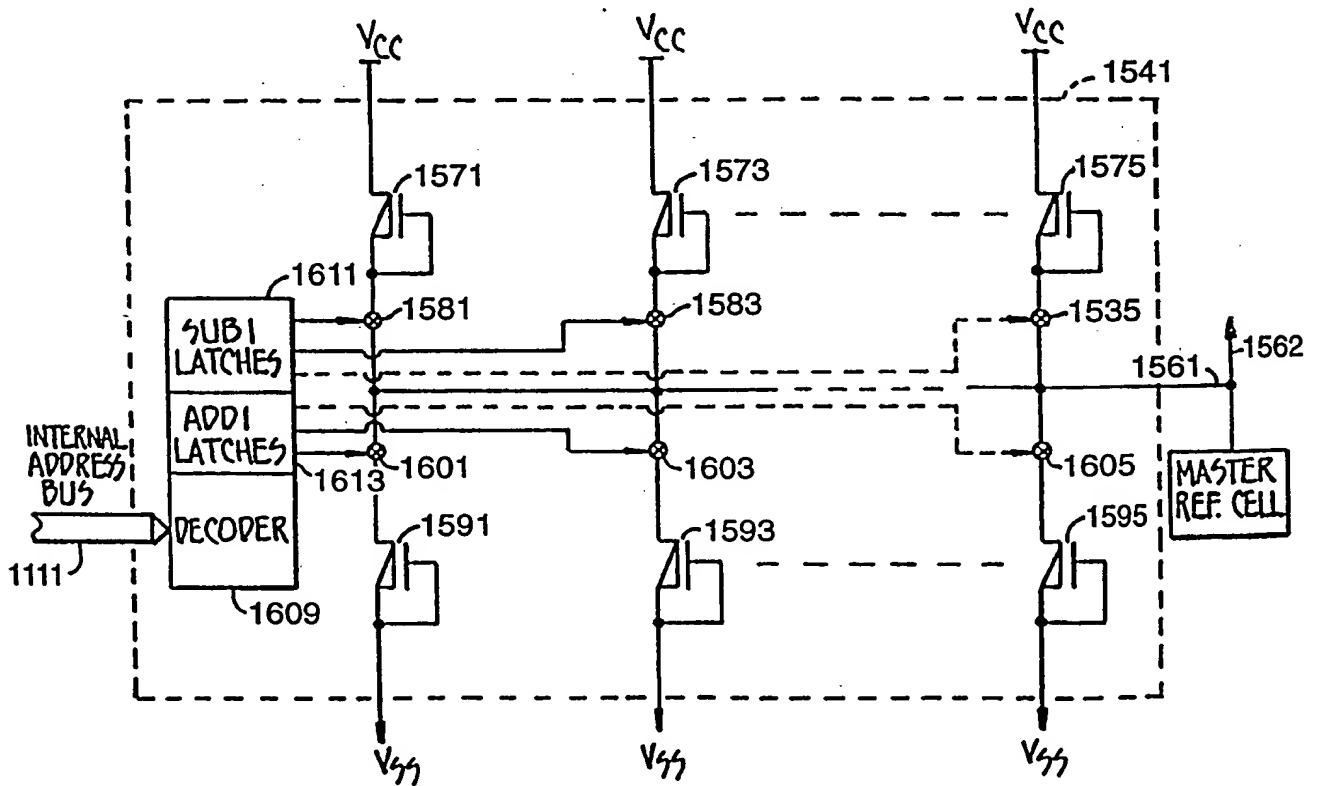
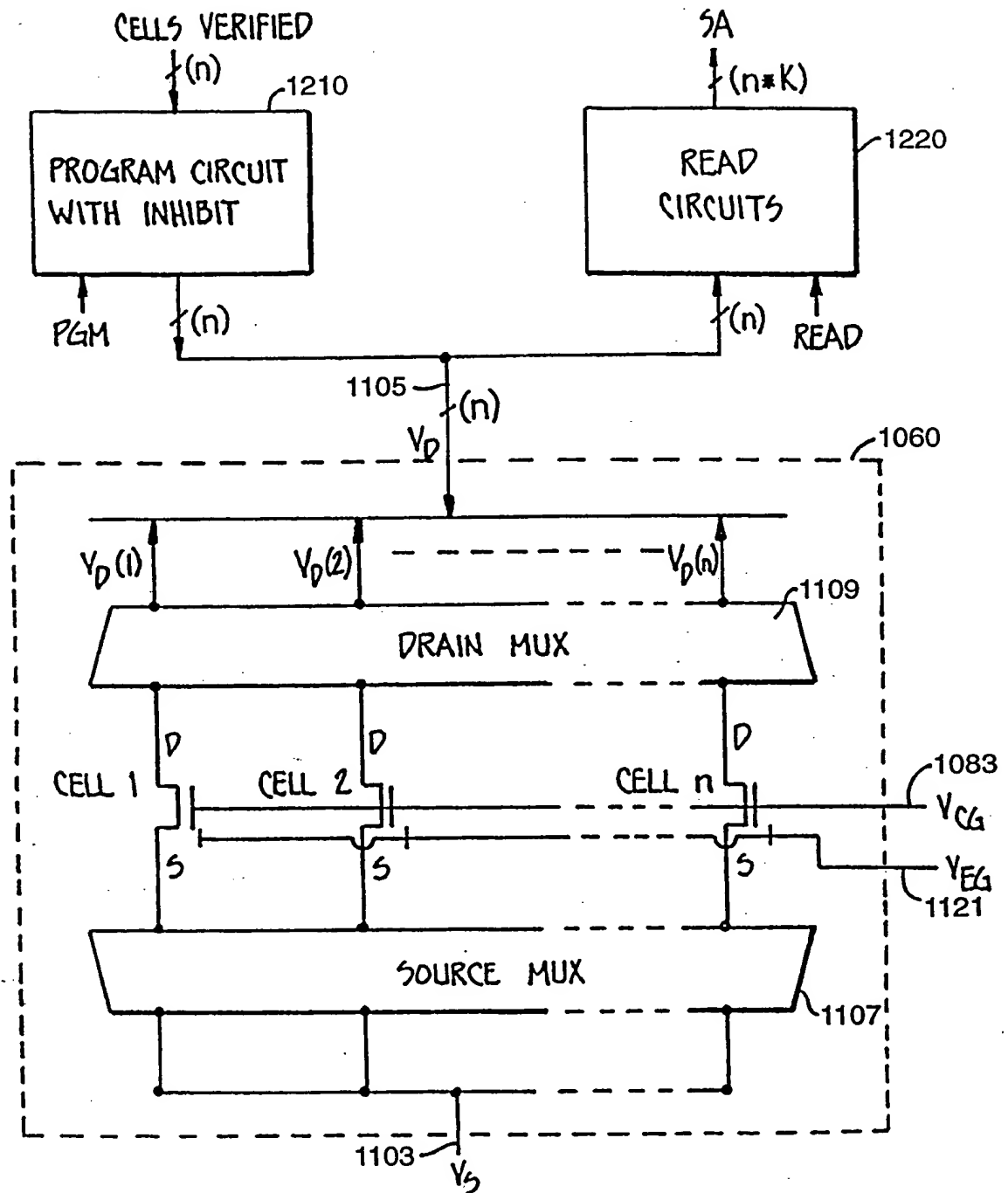


FIG. 21C

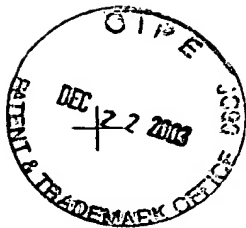


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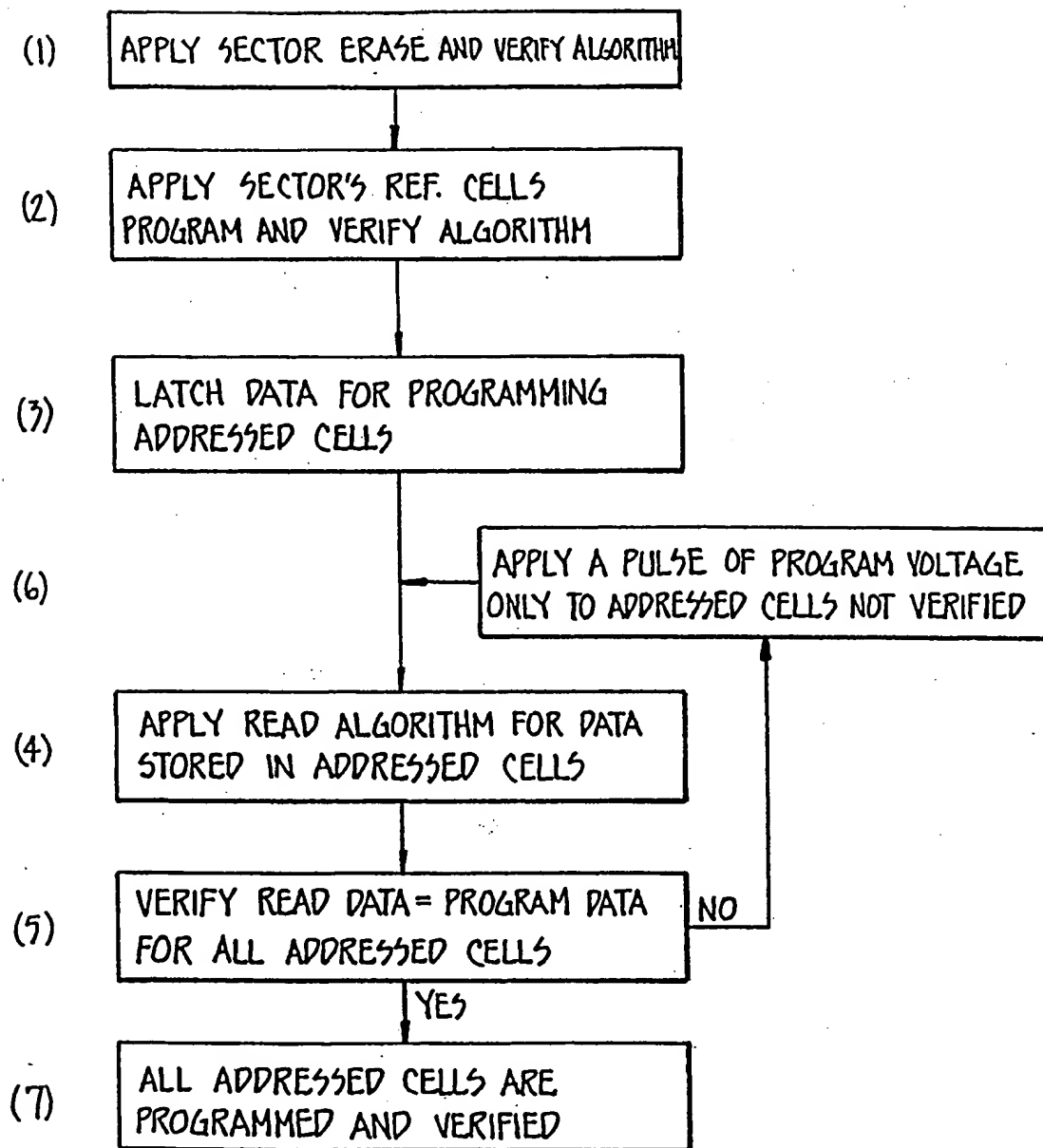


READ/PROGRAM DATA PATHS FOR n CELLS IN PARALLEL

FIG. 22



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PROGRAM ALGORITHM

FIG. 23

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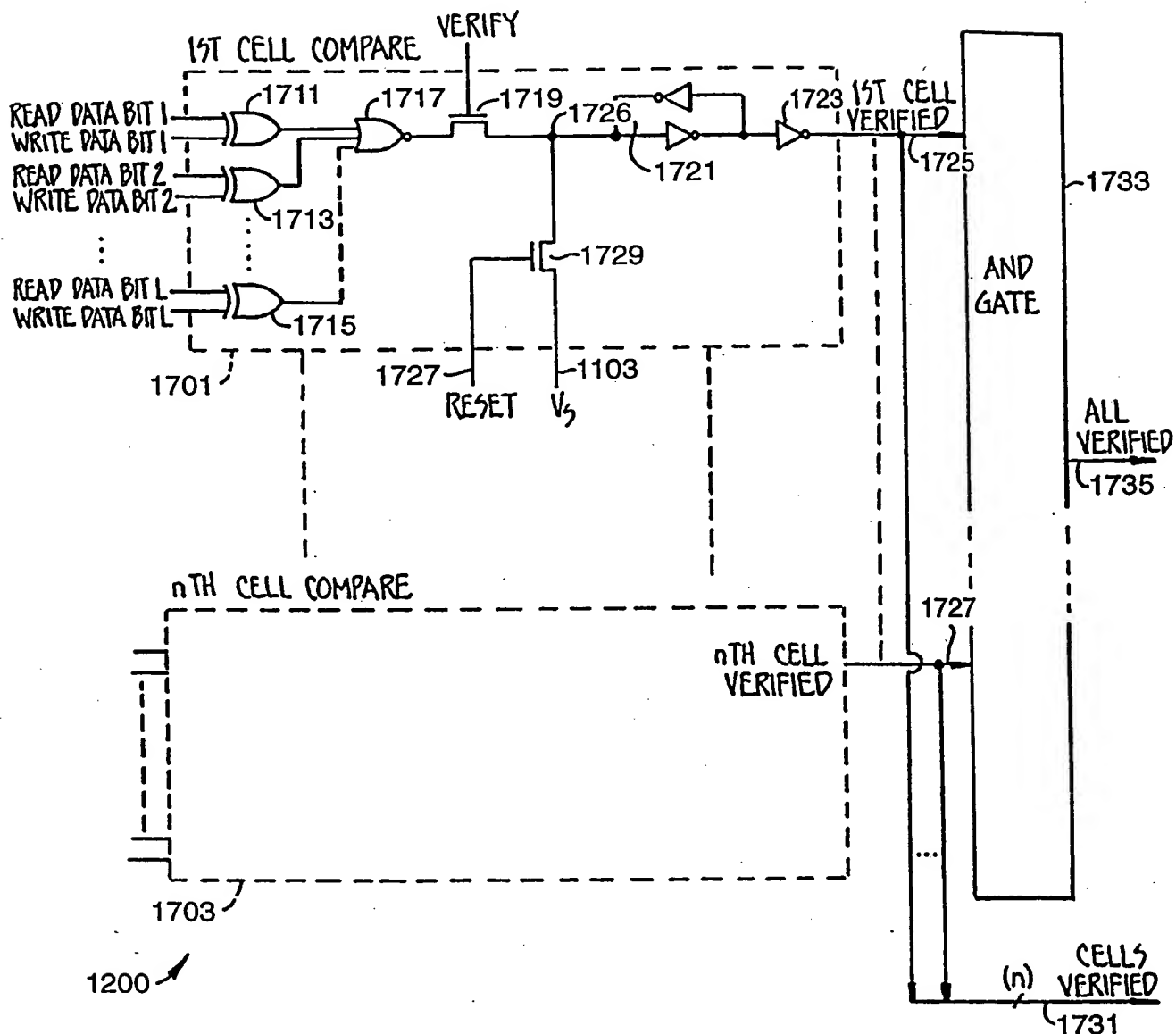
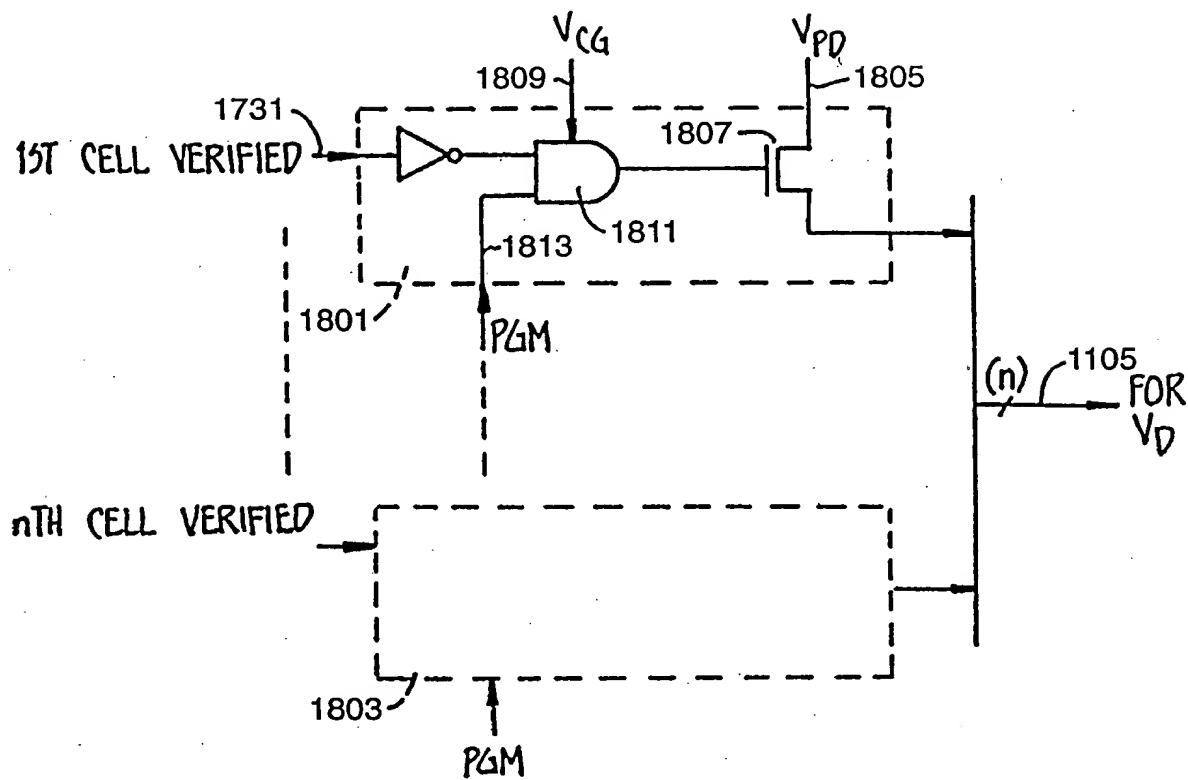


FIG. 24



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FIG. 25



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	SELECTED CONTROL GATE V_{CG}	DRAIN V_D	SOURCE V_S	ERASE GATE V_{EG}
READ	V_{PG}	V_{REF}	V_{SS}	V_E
PROGRAM	V_{PG}	V_{PD}	V_{SS}	V_E
PROGRAM VERIFY	V_{PG}	V_{REF}	V_{SS}	V_E
ERASE	V_{PG}	V_{REF}	V_{SS}	V_E
ERASE VERIFY	V_{PG}	V_{REF}	V_{SS}	V_E

TABLE 1

FIG._26

(TYPICAL VALUES)	READ	PROGRAM	PROGRAM VERIFY	ERASE	ERASE VERIFY
V_{PG}	V_{CC}	12V	$V_{CC} + \delta V$	V_{CC}	$V_{CC} - \delta V$
V_{CC}	5V	5V	5V	5V	5V
V_{PD}	V_{SS}	8V	8V	V_{SS}	V_{SS}
V_E	V_{SS}	V_{SS}	V_{SS}	20V	V_{SS}
UNSELECTED CONTROL GATE	V_{SS}	V_{SS}	V_{SS}	V_{SS}	V_{SS}
UNSELECTED BIT LINE	V_{REF}	V_{REF}	V_{REF}	V_{REF}	V_{REF}

$V_{SS} = 0V$, $V_{REF} = 1.5V$, $\delta V = 0.5V - 1V$

TABLE 2

FIG._27

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